

Catch curve analysis.

fish5102stockcatch The development of a year-class

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Introduction

Can convert this and consider by yearclass

l-Cod catch in nos at age

	1983	1984	1985	1986	1987
3	3.6	6.8	6.5	20.6	11.0
4	10.9	31.6	24.6	20.3	62.1
5	24.3	19.4	35.4	26.6	27.2
6	18.9	15.3	18.3	30.8	15.1
7	17.4	8.1	8.7	11.4	15.7
8	8.4	7.3	4.2	4.4	4.2

A diagonal line in the above table represents a yearclass.

x

Can convert this and consider by yearclass

Catch curve analysis (A) Start with some catch curves

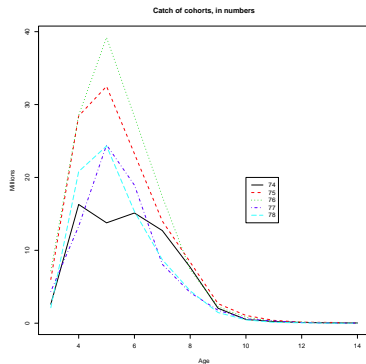


Figure : Catches in numbers at age for several cohorts of cod in Icelandic waters. Each curve represents catches from a single cohort.

We are looking for some pattern, e.g. resembling the stock equation.

Catch curve analysis (I-cod) (B) Log-scale (yearclasses 74-78)

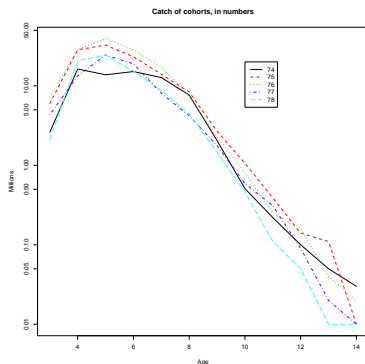


Figure : Catches in numbers at age on log-scale for several individual cohorts of cod in Icelandic waters.

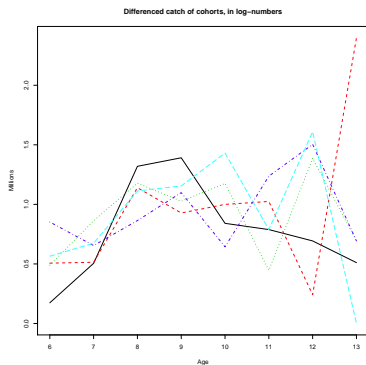
Catch curve analysis (C) Z-by age : $\ln(N1)-\ln(N0)$ 

Figure : Differences on log-scale of catches in numbers at age for several cohorts of cod in Icelandic waters. Note the erratic behaviour of the differences.

Catch curve analysis log axis...

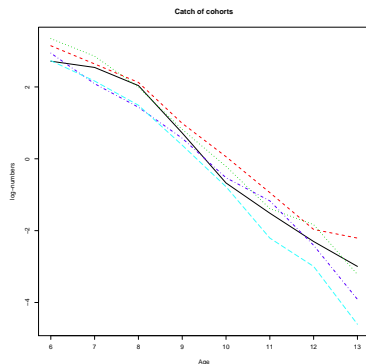


Figure : Catches in numbers at age on log-scale for several individual cohorts of cod in Icelandic waters. The age range is restricted to ages which correspond to a linear drop in log-numbers.

Catch curve analysis (D) Z estimated as 1.04

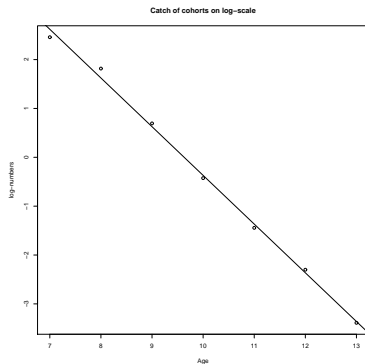


Figure : Average catches in numbers at age on log-scale for several individual cohorts of cod in Icelandic waters. The age range is restricted to ages which correspond to a linear drop in log-numbers and an average of the logged numbers is computed across the cohorts.

Use average of several cohorts

Slope = $-Z$

Note: Must select age range where the slope is constant, i.e. the drop is linear throughout the selected age range!

Catch curve analysis

To compute average of log-catch by year-class the following must be met:

- Mortality must not increase by age
- Effort must not increase by time
- Averaging needs to be carefully implemented
- Catch needs to be proportional to stock size

I-cod, Yearclasses 1960-92.

